1045-163 Electrical Prediction of Postoperative Atrial Fibrillation From Continuous Recordings of Atrial Electrograms

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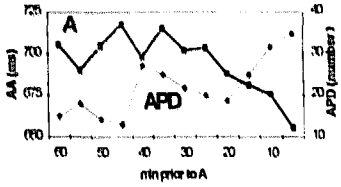
The ability to predict atrial fibrillation (AF) after cardiac surgery may help to target prophylactic therapies. We sought to determine electrical markers that could predict the onset of postoperative AF.

Methods: Surface and intra-atrial electrograms were recorded for 3 days after coronary bypass surgery in 28 patients. A dual-chamber pacemaker (Medtronic Thera DR MN 4940) with automatic mode switching capabilities was used and detected 9 sustained runs of AF in 5 pts.

Results: Frequency of atrial ectopy (APDs) increased during the hour preceding AF (208 ± 278/hr) vs. the baseline period, defined as the time period up to one hour preceding the onset of AF (121 ± 224/hr; p = 0.12). Average APD coupling interval during the hour prior to the onset of AF was shorter than the baseline period (422 ± 83 ms vs. 529 ± 115 ms; p = 0.028). Average A-A intervals (AA) were calculated every 5 min in the hour preceding AF. The mean AA significantly shortened and APD counts increased prior to AF (see graph). The AA and APD in the 5 min just prior to AF onset were significantly different (p < 0.05) from all AA greater than 35 min, and APD at baseline, respectively.



Conclusion: Changes in AA and APD can herald the onset of AF in patients after cardiac surgery and may provide an indicator for prophylactic interventions.

1045-164 Atrial Fibrillation Is Common After Minimally Invasive Direct Coronary Artery Bypass Surgery

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Atrial fibrillation (AF) is the most common arrhythmia seen after CABG occurring in 25%–40% of pts. Recently minimally invasive direct coronary artery bypass surgery (midCAB) has been explored as an alternative to the traditional CABG. Because of differences in surgical approach and post-op recovery among the 2 procedures, we looked at the incidence of AF in pts undergoing midCAB and CABG. Forty-two consecutive pts undergoing mini-CAB were compared with 33 pts undergoing CABG. Baseline variables and post-op course are depicted below.

	midCAB	CABG
Age (years)	63 ± 12	65 ± 11
Male Sex	79%	67%
Diabetes	19%	42%*
Hypertension	29%	61%*
Prior MI	36%	52%
Pre-op LVEF	53% ± 12%	52% ± 12%
Post-op Event	24%	24%
Post-op AF	26%	33%
Post-op AF day	5.3 ± 3.0	2.5 ± 1.3*
AF Duration (median)	3 hours	6 hours

* p < 0.05 for CABG vs mid-CAB pts.

Conclusions: AF is common after midCAB, and its incidence is similar to that in CABG pts. Although mini-CAB may offer advantages to CABG with respect to post-op recovery, the development of AF does not contribute to these advantages.

1045-165 Atrial Wavelength Does Not Predict the Occurrence of Atrial Fibrillation After Open Heart Surgery

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Background: Atrial fibrillation (AF) occurs in 30% of patients that undergo open heart surgery (OHS). The wavelength hypothesis of AF states that slow conduction velocity and a short atrial refractory period facilitate the initiation and maintenance of AF. We investigated the relation between post op AF and an estimate of the atrial wavelength in patients in the first week after OHS.

Methods: 41 patients had P wave triggered signal averaged P wave duration (SAPD) and atrial effective refractory period (ERP) measured 2.2 ± 1 days after surgery. Atrial ERP was measured at twice threshold at two atrial sites at 2 drive train cycle lengths using 4 epicardial wires (results presented are the average of these measurements, the results were the same for the maximum or minimum values). SAPD varies inversely to atrial conduction velocity therefore the atrial wavelength was estimated by the ratio of the ERP to SAPD. The incidence of AF was determined by continuous Holter monitoring.

Results: 17 patients had AF. SAPD was longer (123 ± 10 vs. 1106 ± 23 p = 0.03) but unexpectedly the ERP tended to be longer in patients that developed AF compared to those that did not (259 ± 25 vs. 249 ± 24 ms, p = 0.24). As a result, the wavelength estimate paradoxically tended to be longer in patients that developed AF (1.95 ± 0.35 vs. 2.05 ± 0.28 p = 0.43).

Conclusion: The trend of atrial wavelength and ERP to be longer in patients that develop AF after OHS suggests that other factors such as the dispersion of atrial refractoriness or the presence or absence of a trigger such as PACs may be more important in determining the incidence of AF in this clinical situation.

1046 Ventricular Tachycardia/Arrhythmia Models: New Ablation Techniques

Monday, March 30, 1998, Noon–2:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 1:00 p.m.–2:00 p.m.

1046-167 Randomized Controlled Trial of Ventricular Tachycardia Treatment by Cooled tip Catheter Ablation vs Drug Therapy

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Successful radiofrequency ablation (RFA) of ventricular tachycardia (VT) in patients (pts) with organic heart disease is much less certain than RFA for supraventricular arrhythmias and nonischemic VT. Thus, a new catheter with internal saline cooling was developed to increase lesion size and improve efficacy. 105 pts were randomized in a clinical trial to compare cooled (C) RFA (n = 73) and drug therapy (DT, n = 32). The primary endpoint was any VT recurrence including those that were unmappable/untargeted. Demographics were similar (CRFA vs DT): age 62.5 ± 19.8/66.7 ± 19.8 yrs, male gender 92%/84%, ischemic heart disease 83%/91%, mean LV EF 0.31 ± 0.13/0.29 ± 0.12, #VT episodes 23 ± 53/19 ± 38, # drug failures 2.5 ± 1.6/2.2 ± 1.0, prior ICD 70%/75%, prior RFA 18%/13%, and # induced VTs 3.2 ± 2.1/2.6 ± 1.7. By intention-to-treat Kaplan-Meier analysis, VT recurred in 49% of the CRFA and 75% of DT pts at 6 mos (p = 0.0004). By intention-to-treat, acute efficacy of CFRA (no further mappable VT) was 77%. Most importantly, the number of VT episodes in the 2 mos. following CRFA were reduced by >75% in 74% of pts. However, only 59/73 pts (81%) actually received CRFA, and of those 43 (73%) had acute efficacy, with no recurrence in 26 (60%). Interestingly, of the 16 pts with acute inefficacy, 5 (31%) had no recurrence. Of 17 DT pts who crossed over to CRFA, 14/17 (82%) had acute efficacy, 9 of whom (64%) had no recurrence. Major complications occurred in 7/105 pts (2 deaths [1 stroke in control crossover, 1 MI]), 1 stroke, 1 perforation, and 3 3° AV block).

Conclusion: In this first randomized trial of CRFA in drug-resistant and device-failure pts with VT, recurrence was significantly lower with cooled ablation than with drug therapy.

1046-168 Cardioscopic Catheter Ablation With Non-contact, Pulsed Nd:YAG Laser Using Saline Inflated Balloon Catheter

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We developed a new cardioscopic catheter ablation system to ablate myocardial tissue using non-contact laser energy delivery which allows direct visualization of the ablation field. We hypothesized that non-contact, pulsed